## REMARKS

Claims 1-30 are pending. Claims 1, 11, 21 have been amended.


### Claims Rejections – 35 U.S.C. S.102

Claims 1-3, 8-13, 18-23 and 28-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Zhu et al (U.S. Patent No. 6,344,852). Zhu fails to teach or suggest "a binning engine for receiving the graphical objects, wherein the binning engine identifies and discards graphical objects that would not be viewable to a user *prior to bin determination*" as claimed or similarly claimed. (Emphasis added.) .

As noted in the specification on page 5, lines 2-14:

> The present invention optimizes graphics performance during zone rendering by providing back face culling and degenerate object removal functions in the first pass binning process. By removing the back facing polygons and degenerate objects prior to replicating them into bins, subsequent per object operations are avoided for each replication of the objects within the bins.
>
> In particular, the need to replicate back facing and degenerate objects into command structures that are binned is eliminated. Consequently, this reduces memory bandwidth requirements and the memory footprint required for the bin command structures, and eliminates the output of associated state-setting commands that would otherwise be required to properly render the discarded objects. Processing of such objects during the rendering phase is also eliminated. In particular, reading object descriptions from the bin command structures is avoided thus reducing memory bandwidth requirements.

Applicant respectively notes that in Figure 4 of the application, object face culling and degenerate object culling occur prior to *both bin determination and primitive generation/replication.* As noted on page 10, paragraph 2:

> FIG. 4 illustrates a detailed block diagram of an embodiment 170 of a binning process. Prior to output primitive generation/replication 182, the graphics-binning engine 126 carries out binning through a number of steps, including but not limited to, primitive parsing 172, object face culling 174, degenerative object culling 176, bin determination 178, vertex index reordering 180.

Zhu fails to teach or suggest discarding graphical objects that would not be viewable to a user *prior to bin determination.* The passages cited by the Examiner refer to bin determining *followed by* selectively storing graphics data. For example, Zhu discloses at column 1, lines 61-67:

> According to an embodiment of the present invention, a method implemented in hardware for optimizing the rendering of an image includes the following steps: determining each tile in an image frame touched by a geometry;

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and selectively storing graphics data for the geometry into a separate, corresponding portion of memory for each tile touched by the geometry.

As shown in Fig. 2 of Zhu, the geometry rejector 27 receives objects that have already been through bin determination 22. As noted in column 5, lines 53 to column 6, line 14:

> In one embodiment, geometry data and mode data are received as separate flows into binning engine 12. As depicted in FIG. 2, for these separate flows of graphics data, binning engine 12 includes a geometry buffer 22 and a mode buffer 24. Geometry buffer 22 and mode buffer 24 each generally functions to buffer graphics data. In particular, geometry data is primarily buffered by geometry buffer 22, and mode data is primarily buffered by mode buffer 24. Geometry buffer 22 and mode buffer 24 can be implemented in the same or separate memory. In one embodiment, mode buffer 24 may comprise a first-in-first-out (FIFO) buffer.
>
> Geometry buffer 22 and mode buffer 24 are advantageous in that they maintain efficient memory transfers. Furthermore, buffers 22 and 24 attenuate the variability in the amount of processing which may be needed for different geometries. That is, some geometries may touch many tiles, and thus require a relatively long time for processing of the associated graphics data; other geometries, however, may not even appear in the relevant image frame, and thus the associated graphics data can be discarded immediately. Geometry and mode buffers allow binning engine 12 to continue accepting graphics data even while processing large geometries, and conversely, to quickly discard graphics data when processing is unnecessary. This allows binning engine 12 to identify the tiles touched by one geometry while writing graphics data for the previous geometry to the appropriate memory bins 18. By pipelining these operations, binning engine 12 can keep its entire pipeline busy all of the time.

Nowhere does Zhu disclose or suggest identifying and discarding graphical objects that would not be viewable to a user *prior to bin determination*. Zhu in fact teaches away from this. The geometry rejector 27 in Zhu processes objects *after* bin determination. (See column 6, lines 15-61.

## Claim Rejections – 35 U.S.C. §103(a)

The Examiner rejected claims 2-10, 12-20 and 22-30 under 35 U.S.C. 103(a) as being unpatentable by Zhu (U.S. Patent No. 6,344,852) in view of Deolaliker (U.S. Patent No. 5,898,437). Applicant respectfully disagrees with the Examiner's rejection for the same reasons noted above. In view of the above, it is respectfully requested the claims are allowable over Zhu and Deolaliker, alone or in combination.

## CONCLUSION

In view of the foregoing, it is respectfully asserted that all of the claims pending in this patent application are in condition for allowance.

The required fee for a three month extension of time is enclosed. Should it be determined that an additional fee is due under 37 CFR §§1.16 or 1.17, or any excess fee has been received, please charge that fee or credit the amount of overcharge to deposit account #02-2666.

If the Examiner has any questions, he is invited to contact the undersigned at (310) 252-7605. Reconsideration of this patent application and early allowance of all the claims is respectfully requested.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR, & ZAFMAN LLP

Dated: <u>July 16, 2004</u>       By: _____

Farzad E. Amini, Reg. No. 42,261

12400 Wilshire Boulevard
Seventh Floor
Los Angeles, California 90025
(310) 207-3800

### CERTIFICTE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail with sufficient postage in an envelope addressed to: Mail Stop RCE, Commissioner for Patents, Post Office Box 1450, Alexandria, Virginia 22313-1450 on <u>July 16, 2004.</u>

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Margaux Rodriguez                    July 16, 2004

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